

# CO Codes & Standards Study and Evaluation

**Guidehouse**

5/10/2023 Xcel Energy DSM Roundtable

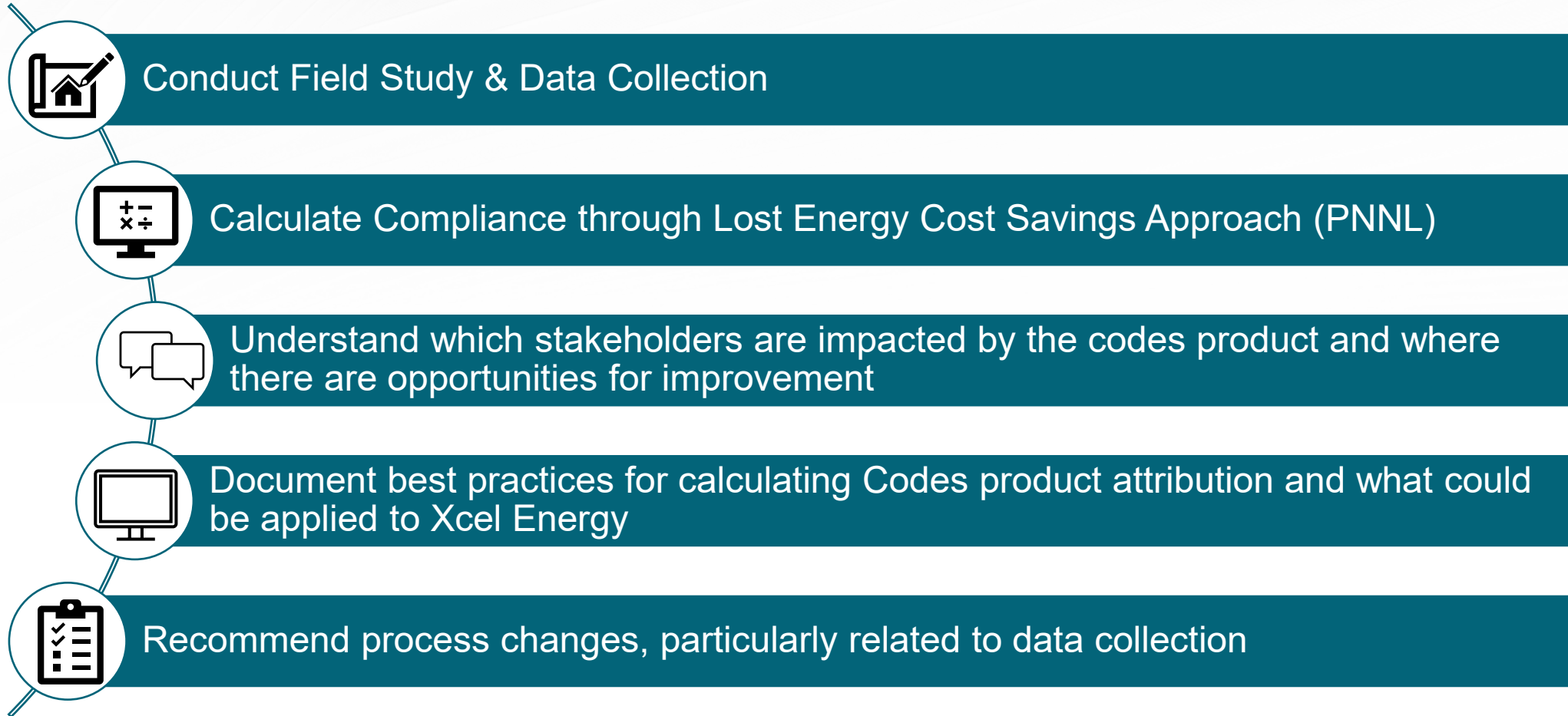


# Agenda

- Project Overview
- CO Code Compliance Study Findings
- Overall Codes Product Recommendations

# Project Overview

# Evaluation Objectives



# CO Code Compliance Study Findings

# Field Study Observations

Areas for Improvement	Positive Findings
Compliance documentation in field	Better energy code plan reviews
Commissioning of lighting controls	Lighting power density always met
Commissioning of mechanical equipment	HVAC efficiencies exceeded minimums
COMcheck and Performance Report reviews	More buildings starting to go performance and get tested
Daylighting and skylights	Putting in better windows
Not a lot of energy inspections	More jurisdictions on newer codes

# Field Study Observations

Areas for Improvement	Positive Findings
Equipment sizing / Load calculations	Better overall compliance than expected
Mechanical and lighting were the only options chosen	Large improvement from last commercial study in 2016
Elevator lighting / fans	People want to learn where they can do better. Nobody sets out to do a bad job.
Equipment efficiencies not on plans	<b>Regularly exceeding code requirements</b>
Glazing U-factors and SHGC verification	

# Total Lost Energy Cost Savings by Building Type

Lost Energy Cost Savings from Non-compliance					
Building Type n = # of buildings	Average conditioned area, sf	Sum of \$/yr	Sum of PV \$	Sum of \$/year/ksf	Sum of PV \$/ksf
Office, n = 11	151,450	\$8,086	\$114,661	\$80	\$1,214
Retail, n = 14	137,421	\$33,928	\$576,355	\$432	\$6,926
School, n = 6	176,819	\$6	\$80	\$0	\$0
Multifamily, n = 13	287,187	\$4,134	\$102,121	\$79	\$2,020
Warehouse, n = 6	191,305	\$7,124	\$104,847	\$58	\$904
<b>Grand Total or Weighted Average</b>	<b>196,170</b>	<b>\$53,278</b>	<b>\$898,064</b>	<b>\$649</b>	<b>\$11,065</b>



# Overall Codes Product Recommendations for Xcel Energy

# Jurisdiction Relationships

## Areas for Improvement

Continue to tailor the Codes Product based upon each jurisdiction (or region of jurisdictions) segmented by code adoption level.

Build strong relationships with each municipality in the Xcel Energy territory, through the Codes Product implementer.

Encourage jurisdictions to develop Memorandums of Understandings (MOU) with third-party identifiers / verifiers to ensure a mutual agreement on what the jurisdiction and third party are verifying.

Provide a resource that identifies the top 10 to 15 high-impact energy efficiency items to verify and prioritize these measures with jurisdictions.

# Trainings

## Areas for Improvement

Tailor communication and trainings separately to contractors and code officials.

Training must include the different paths of compliance and the required documentation, as needed by each jurisdiction – including specific trainings for designers on how to match their reports to the plans and how to use the software, such as REScheck and COMcheck, and building simulation software like Trane Trace.

Develop training sessions which focus on low-compliance, high-impact areas, such as energy recovery requirements, would help to mitigate future lost energy costs.

# Activities to Calculate Attribution

## Areas for Improvement

Track all activities, surveys, and conversations with municipalities.

Training must include the different paths of compliance and the required documentation, as needed by each jurisdiction – including specific trainings for designers on how to match their reports to the plans and how to use the software, such as REScheck and COMcheck, and building simulation software like Trane Trace.

Continue to make trainings as accessible as possible.

Consider opportunities for collaboration with involved stakeholders on marketing materials.

Document influence over more stringent code design and adoption.

# Green Codes, Stretch Codes, & Electrification

## Areas for Improvement

Work closely with jurisdictions to understand their plans for future code adoption, particularly prior to Colorado's new code legislation in July 2023.

Continue exploring “electric-preferred” code support.

# Program Planning and Savings Estimation

## Areas for Improvement

Document evidence regarding municipal code update plans to more accurately forecast code program savings.

Include natural market adoption in the baseline scenario when estimating codes program savings.

# Questions?

# Your Guides

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